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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,648	08/13/2001	Thomas H. Lee	035905/0104	6565

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EXAMINER

KEBEDE, BROOK

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/927,648

Applicant(s)

LEE ET AL.

Examiner

Brook Kebede

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2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-482 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-482 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:  
  
Group I, Claims 1-33, 39-109, 115-117, 121-161, 218-285, 320-375, 384-390, 401-429, 449-451, 456-466 and 475-482, drawn to Semiconductor Device, classified in class 257, subclass 213+.  
  
Group II, Claims 34-38, 110-114, 118-120, 162-217, 286-319, 376-383, 391-400, 430-448, 452-455, and 467-474, drawn to Method of Manufacturing Semiconductor Device, classified in class 438, subclass 197+.
2. The inventions are distinct, each from the other because of the following reasons:
3. Inventions Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the device of Group II can be manufactured by providing a planarized surface resulted from printing instead of planarizing at least one surface between two successive device levels by chemical mechanical polishing.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
5. If applicants elect either Group I <sup>or</sup> Group II, this application contains claims directed to the following patentably distinct species of the claimed invention:

Group I Claims drawn to the following species:

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**Species 1:** Claims 1-12, drawn to, Memory Device (i.e., having a first input/output conductor above or on a first plane).

**Species 2:** Claims 13-23, drawn to, Memory Device (i.e., having a diode having a first region and a second region).

**Species 3:** Claims 24-33, drawn to, A non-volatile read/write memory cell (i.e., having N and P doped regions).

**Species 4:** Claims 39-43, drawn to, A structure having a diode and an oxide region exhibits a negative resistance.

**Species 5:** Claims 44-53, drawn to, An array of memory cells (i.e., having plurality of cells having at least one semiconductor regions and a storage region).

**Species 6:** Claims 54-63, drawn to, A memory array having N levels wherein N is two or more fabricated above a substrate.

**Species 7:** Claims 64-75 and 94-96, drawn to, A memory device (i.e., having a single crystalline substrate having a plane).

**Species 8:** Claims 76-81, drawn to, A memory device (i.e., having a first contact metal formed above a substrate).

**Species 9:** Claims 82-93, drawn to, A memory device (i.e., having a first silicon film having a first conductivity type formed above substrate).

**Species 10:** Claims 97 and 98, drawn to, A memory device (i.e., having a first pillar comprising a first contact).

**Species 11:** Claims 99-105, 424-429, 450, 456-466 and 475-482, drawn to, A semiconductor device (having a monolithic 3D array of charge storage devices).

**Species 12:** Claims 106-109, drawn to, A 3D semiconductor device.

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**Species 13:** Claims 115-117, drawn to, A semiconductor device (i.e., having active semiconductor region containing a channel, source and drain).

**Species 14:** Claims 121-131, drawn to, A field effect transistor (i.e., having source drain, channel and gate).

**Species 15:** Claims 132-143, 151 and 152, drawn to, A 3D non-volatile device array (i.e., a plurality of vertically separated device levels, each level comprising array of TFT EEPROMS).

**Species 16:** Claims 144-150, drawn to, An EEPROM device (having channel, source, drain and etc.).

**Species 17:** Claims 153-161, drawn to, An array of non-volatile memory cells (i.e., having a semiconductor device and each memory cell size per bit is about  $(2f^2/N)$ ).

**Species 18:** Claims 218-285, 320-337, 346-375 and 451, drawn to, An array semiconductor devices disposed above a substrate.

**Species 19:** Claims 338-345, drawn to, TFT CMOS.

**Species 20:** Claims 384-390, drawn to, A semiconductor device (i.e., having a semiconductor active region, a charge storage region adjacent to the semiconductor active region).

**Species 21:** Claim 449, drawn to, A charge storage device disposed above a substrate (i.e., having a first layer of transition metal-crystallized silicon disposed above a substrate).

**Species 22:** Claims 401-423, drawn to, A flash memory array disposed above a substrate (i.e., having first and second plurality of stacked apart conductive bitlines).

Group II claims drawn to the following species:

**Species 1:** Claims 34-38, drawn to, Method of operating memory cell.

**Species 2:** Claims 110-114, drawn to, Method of making 3D device.

**Species 3:** Claims 118-120, drawn to, Method of making semiconductor device.

**Species 4:** Claims 162-207, drawn to, Method of making an EEPROM.

**Species 5:** Claims 208-217, drawn to, Method of forming TFT EEPROM.

**Species 6:** Claims 286-294, drawn to, Method for programming a memory cell of 3D array NMOS memory with two bits information.

**Species 7:** Claims 295-297, drawn to, Method for reading contents of a memory cell of 3D PMOS memory cells with two bits information stored.

**Species 8:** Claims 298-307, drawn to, Method for erasing the contents of memory cells belonging to a 3D array NMOS memory.

**Species 9:** Claims 308-317, drawn to, Method for manufacturing 3D array of TFT.

**Species 10:** Claims 318-319, drawn to, Method for manufacturing an array of TFT memory cell.

**Species 11:** Claims 376-383, drawn to, Method of programming a circuit.

**Species 12:** Claims 391-400, drawn to, Method of making an array of semiconductor device disposed above a substrate.

**Species 13:** Claims 430-448, drawn to, Method of making flash memory disposed above substrate.

**Species 14:** Claims 452-455, drawn to, Method for manufacturing a charge storage device.

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**Species 15:** Claims 467-474, drawn to, Method of making monolithic 3D array of charge storage device.

6. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

7. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, non is generic.

8. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

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9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

*Correspondence*


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (703) 306-4511. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Brook Kebede

*BK*  
February 26, 2003

  
Olik Chaudhuri  
Supervisory Patent Examiner  
Technology Center 2800